Agriculture Stakeholder Working Group on Scoping Plan Development

February 26, 2008

Overview

- Introduction
- Discussion of Potential Agriculture Strategies, Activities, and Concepts for Greenhouse Gas Reductions
  - Group I – Relatively well-developed
  - Group II – Needing more research
- Timeframes for Scoping Plan

Potential Agriculture Strategies, Activities, and Concepts for Greenhouse Gas Reductions

Agriculture Sector Workgroup Meeting

February 26, 2008

California Air Resources Board

Broad Strategy Categories

- Emission Reductions from Livestock Systems
- Making & Utilizing Energy
- Efficiency Improvements
- Conservation/Sequestration
- Research

Strategy Assessment

- Considerations
  - Availability of data
  - Estimated reduction potential
  - Co-benefits
  - Voluntary win-win opportunities offering cost savings

Strategy Assessment, cont.

- Group I
  - Relatively well-developed
- Group II
  - Needing more research

Group I Strategies

- Livestock Systems
  - Reducing methane at the source
  - Energy recovery from methane capture
- Agricultural Biomass Utilization
- Potential voluntary win-win strategies offering cost savings to the producer
  - Tractor tire inflation program
  - Agricultural irrigation pump efficiency program

Group II Strategies

- Explore enteric fermentation
- Dedicated bio-fuel crops
- On-farm use of renewable energy sources
- Fertilizer use efficiency
- Farmscape sequestration
- Soil carbon sequestration
- Composting

Strategy: Emission Reductions from Livestock Systems

Activities Identified	Data Available	Initial Estimate of Net Annual Reduction Potential (MMTCO2E)	Co-Benefits	Status
Manure Management	Yes	Not Yet Determined	Potential reduction in ROG, odor	Group I
Anaerobic Digestion of Manure Manure Biogas Utilization	Yes	3.1 (ETAAC Report)	Reductions in H2S, ammonia, odor, flies, and up-stream emissions from energy production	Group I
Reducing Emissions from Enteric Fermentation	More Data Needed	0.8 (ETAAC Report)		Group II

Strategy: Making & Utilizing Energy

Activities Identified	Data Available	Initial Estimate of Net Annual Reduction Potential (MMTCO2E)	Co-Benefits	Status
Agricultural Biomass Utilization	Yes	4.1 (ETAAC Report)	Reduced emissions from burning	Group I
Dedicated Bio-Fuel Crops	Yes	1.0 (ETAAC Report)		Group II
On-Farm Use of Renewable Energy Sources	More Data Needed	Not Yet Determined	Reduced NOx	Group II

Strategy: Efficiency Improvements

Activities Identified	Data Available	Initial Estimate of Net Annual Reduction Potential (MMTCO2E)	Co-Benefits	Status
Tractor Tire Inflation Program	Yes	0.02+ (ARB)	Reduced fuel use, reduced soil compaction, increased productivity, cost savings	Group I
Agricultural Pump Efficiency (5% Improvement)	Yes	0.37	Potential reductions in water and fuel use, cost savings	Group II
Fertilizer Use Efficiency	More Data Needed	1.8 (ETAAC Report)		Group II

Strategy: Conservation/Sequestration

Activities Identified	Data Available	Initial Estimate of Net Annual Reduction Potential (MMTCO2E)	Co-Benefits	Status
Farmscape Sequestration	More Data Needed	2.9 (ETAAC)	Potential for improved riparian habitat, water quality	Group II
Soil Sequestration	More Data Needed	3.1 (ETAAC)	Potential for water quality improvements, reduced fertilizer, dust, water, and fuel use, criteria pollutants	Group II
Composting	More Data Needed	Not Yet Determined	Potential reductions in water, fertilizer and pesticide use	Group II

Need for Stakeholder Input

- Identify most feasible/beneficial activities – win-win?
- Costs (capital & operations) of implementing strategies (e.g. bio-energy crops, biomass utilization, etc.)
- Implementation mechanisms? barriers?
- GHG benefit calculations
- Identify & quantify co-benefits (e.g. cheaper energy bills, flies, VOCs, reduced soil run-off, etc.)

Potential Offset Opportunities

- Board will ultimately decide what will qualify for marketable offsets
  - Need stakeholder input for recommendations to Board
- Working scenarios (April)
- Senate Ag Hearing from February 22nd

Data & Research Needs

- **Research**
  - **Fertilizer use efficiency and emissions (N2O workgroup)**
  - **Soil sequestration**
  - **Farmscape sequestration**
  - **Enteric fermentation**
- **Emission reduction quantification protocol development**
- **Development of best management practices for on-farm GHG reductions**
  - **Water management**
  - **Soil management**
  - **Fertilizer use efficiency**
- **Life cycle analysis**

Collaborative Research on how to Reduce GHG Emissions from Nitrogen Land Application

- Collaborative research effort with ARB, CDFA, DPR, commodity groups, and other stakeholders.
- Better characterization of California's nitrogen cycle
- Research ways to reduce N2O emissions while increasing soil retention of nitrogen for plant up-take
- Identified as an Early Action item: Board Hearing in 4th quarter of 2010.

Scoping Plan Timeframe

- Stakeholder meetings (e.g. April 14th)
- June – Draft Scoping Plan
- Public comment throughout
- November 2008 – Board consideration of Scoping Plan